

Exelon Board Governance Approach to Achieving Excellence in Nuclear Plant Fleet Operations and Nuclear/Radiological Safety

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Exelon Board of Directors (Retired 2012)

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Asian ISOE ALARA Symposium

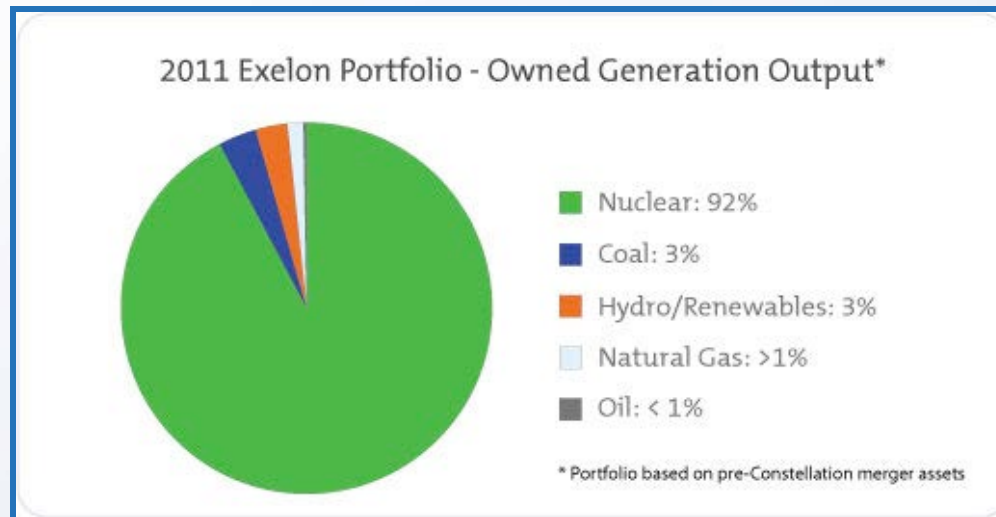
Tokyo, Japan



Exelon Generation[®]

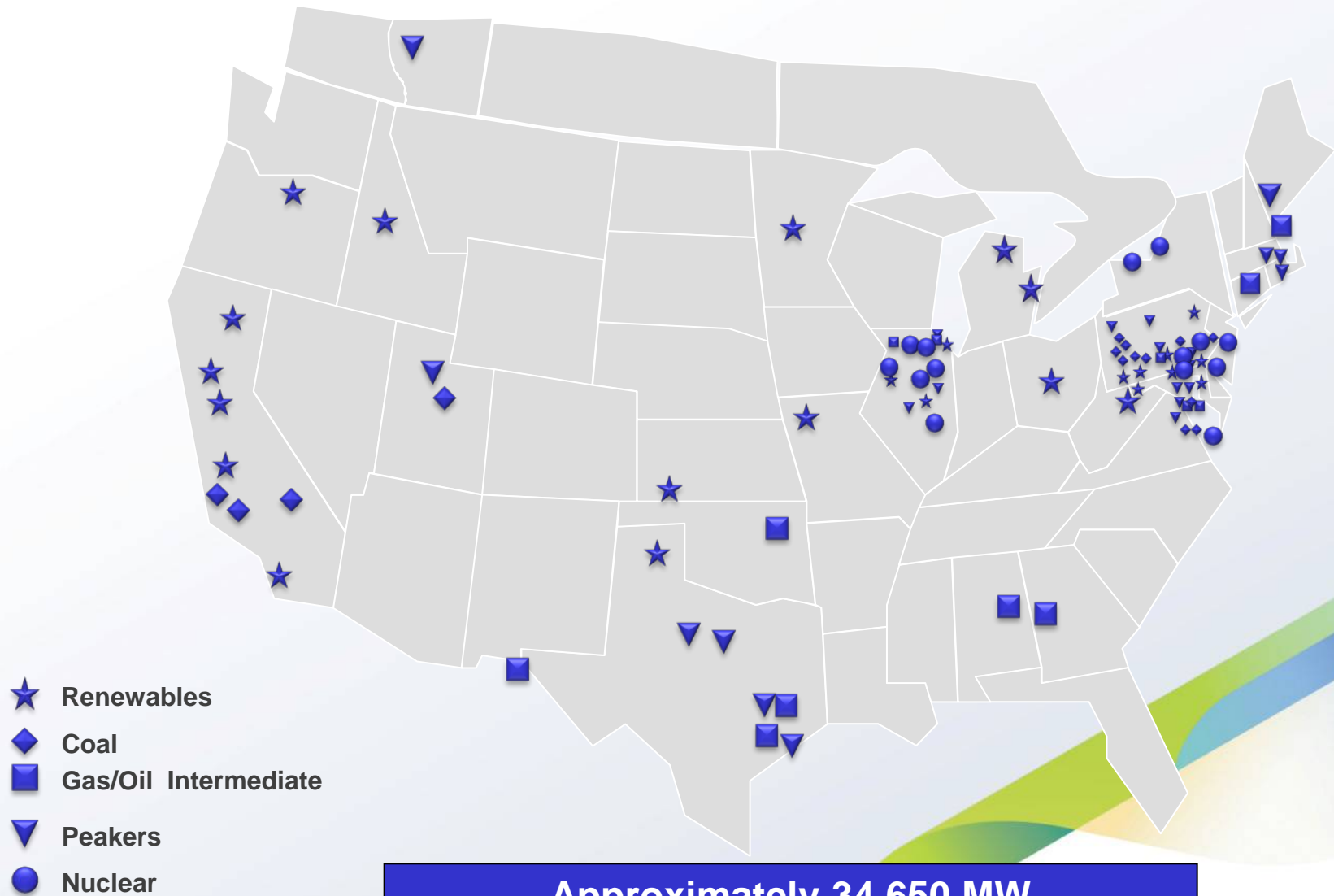
Exelon Generation

- ❖ Exelon Nuclear is headquartered in Kennett, Pennsylvania
- ❖ It is a business unit of Exelon Generation and operates the largest nuclear fleet in the United States.
- ❖ Exelon Generation operates:
 - 17 reactors - in Illinois, Pennsylvania and New Jersey.
 - Exelon also has ownership interest in 4 other nuclear plants

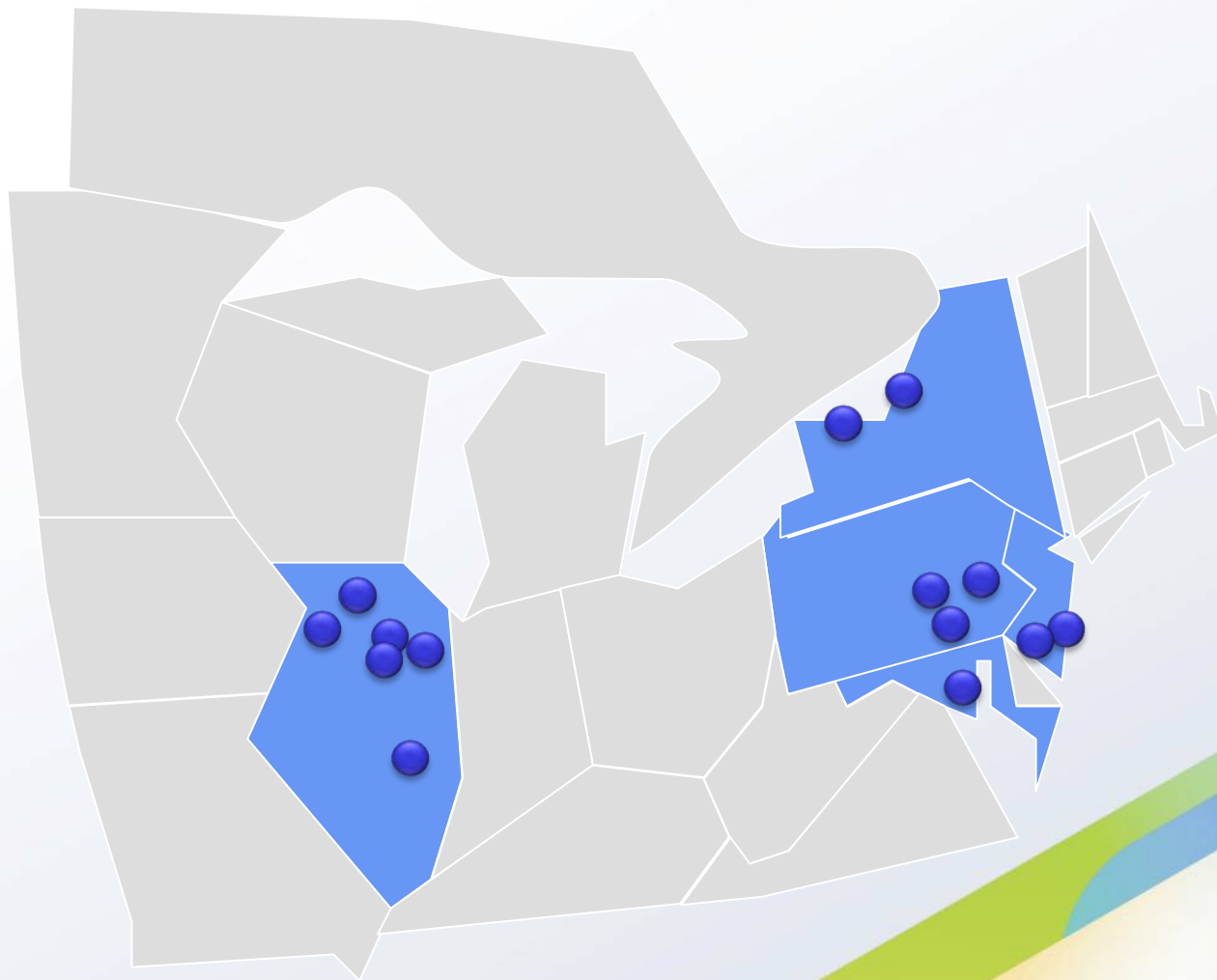


- ❖ Exelon Generation Consults Internationally through Exelon Nuclear Partners, LLC.

Exelon Generation Assets



Exelon Generation Nuclear Assets



Board Governance and Excellence

- ❖ Governance through Committees
 - Audit, Corporate Governance, Compensation, Deliverance, Generation Oversight and Risk Management
- ❖ Determines the company's vision, mission and values to guide and set the pace
 - For current operations
 - Future development
- ❖ Determines the values to be promoted throughout the company
 - Operational Excellence
 - Nuclear and Radiation Safety
 - Occupational
 - Environmental

Board Governance and Excellence (continued)

- ❖ Oversees Implementation of Exelon Nuclear Management Model for Excellence
 - Strong Centralized Governance with clear objectives and performance standards
 - Uses the model to achieve operational excellence
- ❖ Governance Board of the Company
 - Hires the Chief Executive Officer
- ❖ Regulatory and Market Environment
 - Involvement of Risks
 - Approves Financials

Top Performance is Not Automatic

❖ It is achieved and sustained through:

- Board Leadership and Vision
- Involvement of the Workforce
- A commitment to Stretch Goals and Continuous Improvement
- Implementation and Adherence to Standard Policies, Programs and Process of Best Practices
- Close engagement and oversight by management
- A profound respect for Nuclear Safety held by Every Employee

❖ Safety Culture

- Defined by the organization's values and behaviors.
- A foundation of steadfast principles that demand nuclear safety

❖ Top Performance Leadership

- Exelon Generation Oversight Committee (GOC)

Exelon Board

Generation Oversight Committee (GOC) Charter

❖ Mission of GOC

- GOC is the nuclear oversight committee for the Board of Directors
- Fulfill responsibilities to oversee the safe and reliable operation of all generation facilities owned and operated by Exelon Generation Company, LLC, collectively referred to as the GENCO

❖ Membership

- Consists of at least 3 Board of Directors
- Exelon Board determines membership annually

❖ Board Communication

- Close communication to Board of Directors
 - Regular quarterly meetings, plus others as required
- GOC Minutes Recorded and Issued to Exelon Board Members
- The Chair of the Committee shall report all actions taken by the Committee to the full Board

❖ Independent advisors and consulting experts

- Approves such advisors, fee and retention terms

Exelon Nuclear Units

Performance Review Functions

❖ GOC Functions

- Act for the Board on matters which the full Board has delegated to the Committee
- Senior Management Reports review of key indicator trends for all generation stations
- Monitor plant performance and key performance indicator results and trends
- Receive prompt notification of and monitor significant incidents or events at any generating station

❖ GOC Nuclear Site Functions

- Periodically visit and inspect key nuclear operating facilities
- Become familiar with the site management team
- Nuclear Safety Review Boards (NSRB)
- Nuclear Site Oversight Department

❖ Environmental Health and Safety

Nuclear Safety Excellence

“The Bar Is Always Raised”

- ❖ Exelon Nuclear is Committed to Being the Best Operator of Nuclear Plants Worldwide
 - The Excellence Level Requires both Sustainability and Continuous Improvement.
 - “The Bar is Always Raised” so Peak Performance Requires Continuous Improvement
- ❖ Exelon recognizes that Nuclear and Radiation Safety is more than our regulatory responsibility, it is our social responsibility
 - Partnering with our Communities to Maintain a “Social License to Operate”

GOC Oversees Radiation Safety Excellence

- ❖ Strategic Focus Area
 - Exposure Reduction Plan
- ❖ If we don't measure it, it won't improve
 - Goal Setting and Measurement
 - Benchmarking
 - Gap Analysis
- ❖ Keys
 - Engagement
 - Procedures and Processes
 - Using Technology to Reduce Source Term
- ❖ Processes for Continuous Improvement
- ❖ Plan Development

Radiation Safety Improvements

Through New Technologies Reported at ISOE/NATC Symposiums

- ❖ Board Member Participation in Conference
 - Attended Last 10 years of ISOE/North American Symposium
 - Focused on Dose Reduction Initiatives from Exelon RPM paper
 - Shared information globally
- ❖ Emerging Technologies Always Part of ISOE/NATC Agenda
 - CEA/ EdF CZT Gamma Spectroscopy Detection
 - Los Alamos National Lab (LANL) / (n,p) Energy, Inc. (NPE) Engineered Source Term Solution
- ❖ Both Technologies Now Implemented at Exelon
 - CZT Gamma Spectroscopy -- All Exelon Nuclear Units
 - Braidwood-1,2 Lead Exelon PWR for NPE/PRC Solution
 - Peach Bottom-2, 3 Lead Exelon BWR for NPE/PRC Solution
- ❖ Both Technologies Now Strengthening Radiation Safety Performance
 - Expanding use in 2013

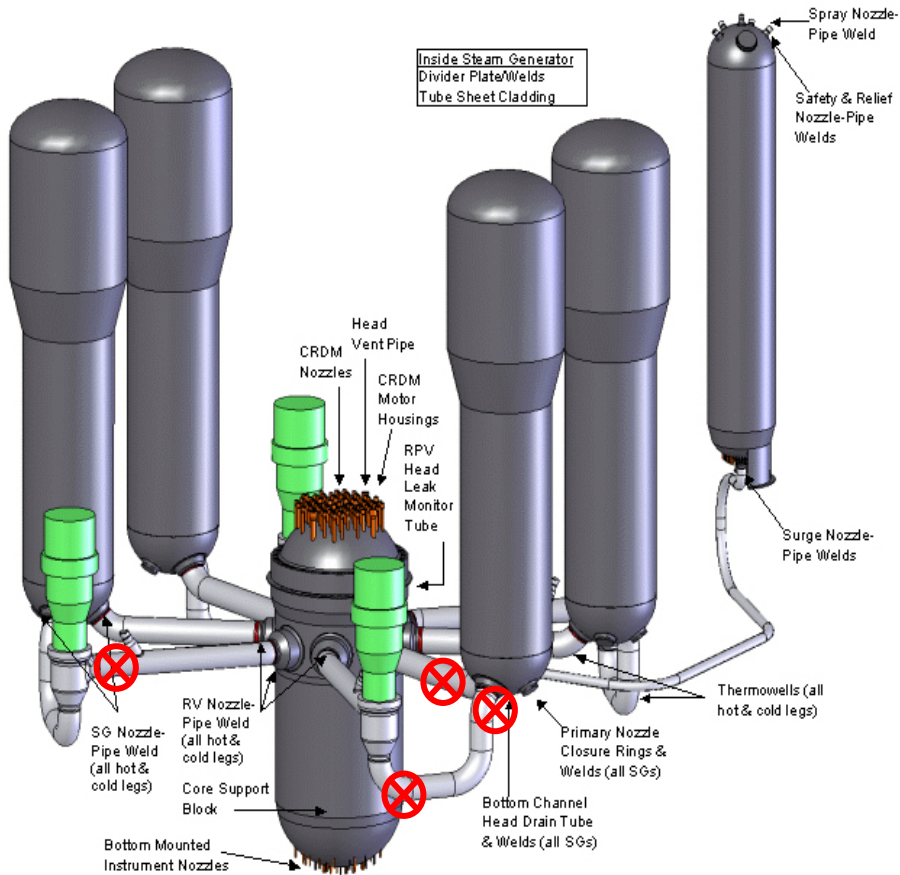
Example of Exelon GOC Function on Braidwood-1,2 Radiation Safety Results

- ❖ Westinghouse 4-Loop PWR
 - Unit 1 : 1190 MWe
 - Unit 2: 1156 MWe
- ❖ Duplicate Reactors on Two Sites
 - Byron-1,2
 - Braidwood-1,2



Braidwood-1,2

Radiation Safety Results



- ❖ Benchmarked
 - Braidwood-1,2 to DC Cook-1,2
- ❖ Los Alamos National Laboratory & (n,p) Energy, Inc. Solution Implemented
- ❖ Braidwood-A1R16 Results
 - **-54% in SG Dose Rates**
 - Lowest Dose Rates for **past 5 refueling outages** (8 years)
- ❖ 2013 Expanded Deployment
 - Three Mile Island-1
 - Byron-1,2

Radiation Safety Improvement Results

Peach Bottom 2,3 (PBAPS) Source Term Reduction Solution



Location: Delta, PA

Containment: BWR-Mark 1

Commercial: 15 Jul '74, 15 Dec '74

Power:

Unit 2 1148 MWe

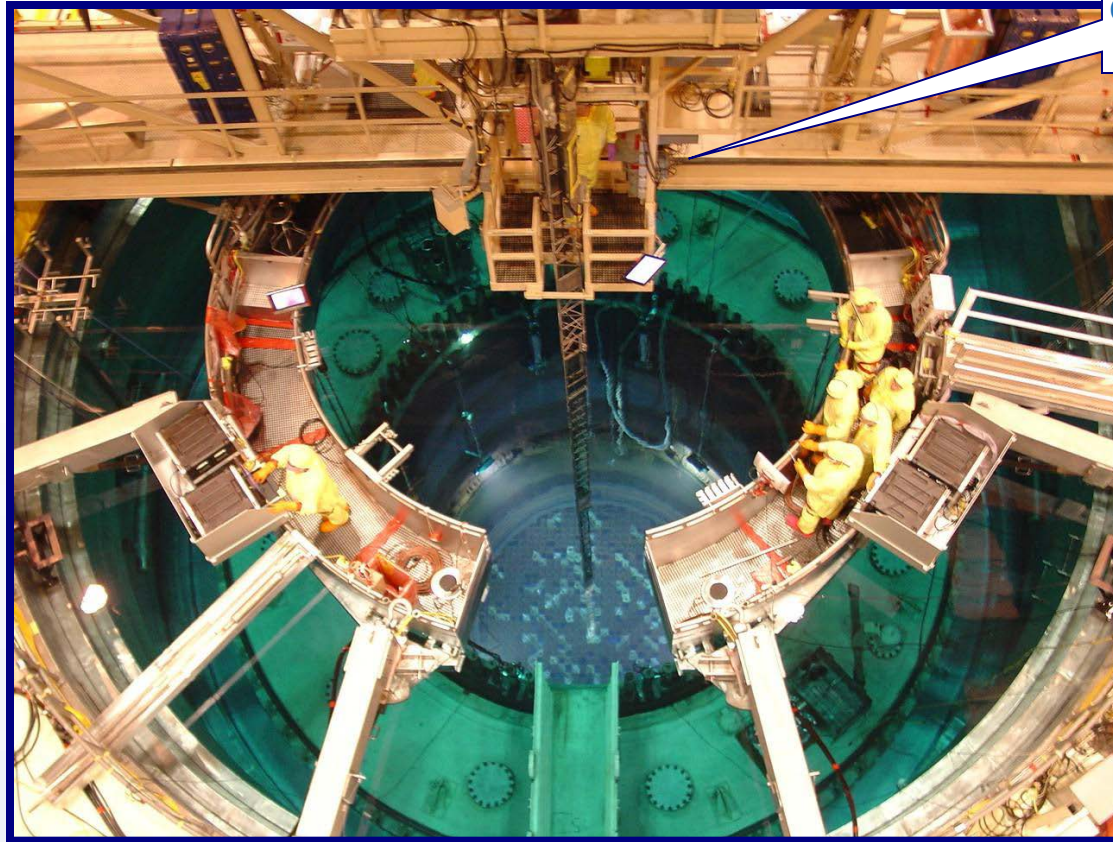
Unit 3 1151 MWe

Operating Years: 38

Reactor Cavity Work Platform (RCWP)

A Significant Radiological Challenge for Exelon BWRS

Peach Bottom-2 Cavity

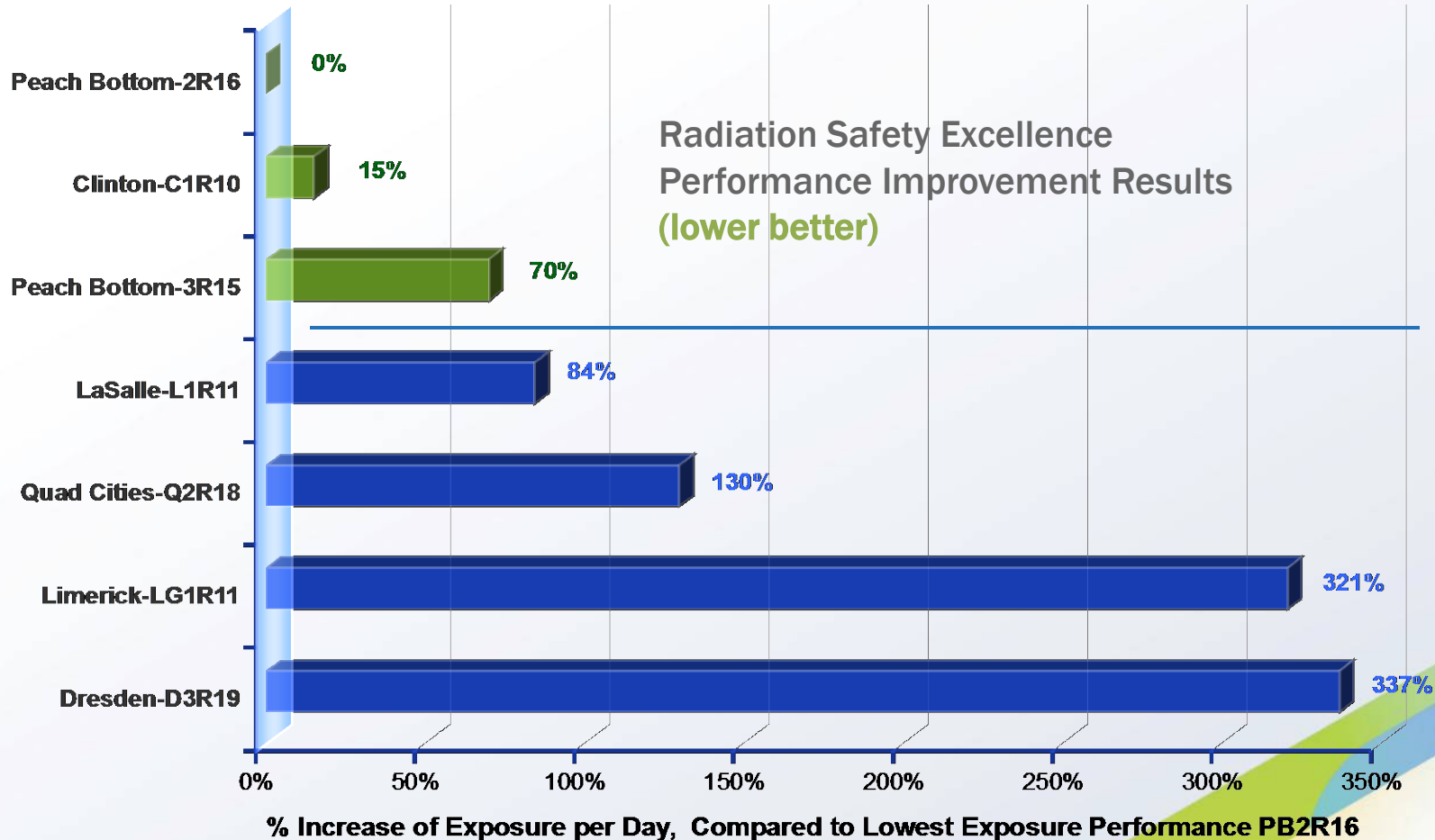


Refueling
Occurring Simultaneously
with Vessel Inspection

Use Offers Advantages of 5 days of Critical
Path Outage Time

Exelon Benchmark of Purification Technology

Peach Bottom 2,3 and Clinton Work Cavity Platform



Radiation Safety Improvement Results

- ❖ The Combined Impact of All Technology Changes Results in Radiation Safety Excellent
 - Peach Bottom 3R17: Station Low Dose Record Achieved
 - Peach Bottom 2R16: Station Low Dose Record Achieved

Infrastructure Issues

❖ It ought to work

- Successful Asian experience
- Strengthening supply chain worldwide
- Forecast worldwide nuclear development at only 25% the pace of the 1980s
- Center for Energy Workforce Development, regional labor initiatives

❖ But will it?

- No recent U.S. nuclear construction experience
- U.S. nuclear manufacturing infrastructure has atrophied
- Worldwide demand is creating production bottlenecks
- Labor force continues to age without readily identified replacements

Infrastructure response depends on first movers

What Will It Take?

- ❖ Continued excellence by current fleet
- ❖ Adopt different business models for new nuclear
 - Share the risks through innovative partnerships
- ❖ Take advantage of experience & expertise worldwide
- ❖ Disciplined project execution
- ❖ Engineering/Technician/Operator pipeline
- ❖ Revitalize manufacturing infrastructure
- ❖ Communicate the strength of the industry
- ❖ Drive public policy issues to resolution

**Reduce uncertainties and potential for delays;
the market will react intelligently**

Summary

- ❖ Exelon Board Leadership Drives Values Through All Levels of Management and to Every Exelon Employee
- ❖ Held Accountable for Nuclear Safety
- ❖ Held Accountable for Radiation Safety
- ❖ Excellence is a Process..... That Continues Everyday at Exelon



Closing Comments